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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/563,463

01/05/2006

Kimoon Kim

1751-393

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6449

7590

08/21/2008

ROTHWELL, FIGG, ERNST & MANBECK, P.C.

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WASHINGTON, DC 20005

EXAMINER

GROSS, CHRISTOPHER M

ART UNIT

PAPER NUMBER

1639

NOTIFICATION DATE

DELIVERY MODE

08/21/2008

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

PTO-PAT-Email@rfem.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/563,463	<b>Applicant(s)</b> KIM ET AL.	
	<b>Examiner</b> CHRISTOPHER M. GROSS	<b>Art Unit</b> 1639	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 09 May 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) 4-6 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 7-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>4/7/2006:7/30/2008</u> .                                      | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

Responsive to communications entered 5/9/2008. Claims 1-9 are pending. Claims 4-6 are withdrawn. Claims 1-3,7-9 are examined herein.

#### ***Election/Restrictions***

Applicant's election of group I (claims 1-3,7-9), drawn to a cucurbituril covalently bonded to a silica modified support in the reply filed on 5/9/2008 is acknowledged.

Because applicant did not distinctly and specifically point out any supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Applicant's election with traverse of a single particular species of cucurbituril solid substrate as set forth in the reply filed on 5/9/2008 is acknowledged. Applicant's arguments are deemed persuasive in this regard and the species of cucurbituril solid substrates are hereby rejoined.

Claims 4-6 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 5/9/2008.

#### ***Priority***

The present application was filed on 1/5/2006 and is a 371 of PCT/KR04/01652 filed 07/05/2004.

Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d) to Korean patent 10-2003-0045523 filed 07/05/2003. Receipt is

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acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1,3,7-9 are rejected under 35 U.S.C. 102(e) as being anticipated by **Kim et al** (US Patent Application 2006/0207938).

The claimed subject matter per claim 1 is drawn to a cucurbituril derivative-bonded solid substrate in which:

a cucurbituril derivative of Formula 1 (shown in claims) is covalently bonded to a modified solid substrate of Formula 2 (shown in the claims)

wherein with regard to Formula 1, n is an integer of 4 to 20, and R1 and R1' are each independently an alkenyloxy group with an unsaturated bond end and a substituted or unsubstituted alkyl moiety of C1-C20, a carboxyalkylsulfinyloxy group with a substituted or unsubstituted alkyl moiety of C1-C20, a carboxyalkyloxy group with a substituted or unsubstituted alkyl moiety of C2- C8, an aminoalkyloxy group with a substituted or unsubstituted alkyl moiety of C2-C8, or a hydroxyalkyloxy group with a substituted or unsubstituted alkyl moiety of C2-C8, and

wherein with regard to Formula 2, R2 is an alkyl group of C1-C10 with an end functional group selected from thiol, amine, epoxy, isocyan, and isothiocyan.

Claims 3,7-9 represent variations thereof.

**Kim et al** teach, through out the document and especially the abstract, cucurbituril bonded silica gel useful for purification of biological substances, etc.

Kim et al teach the same structures as set forth in claim 3 in paragraphs 0026, 0037,0041,0047, 0053 and 0056, therein reading on claims 1 and 3, when, for instance, n is from 4 to 20; R1 and R11 are each independently an alkenyloxy group with an unsaturated bond end and a substituted or unsubstituted alkyl moiety of C1-C20; and R2 is an alkyl group of C1-C10 with an end thiol functional group.

The protein chip, gene chip and sensor set forth in claims 7,8 and 9 respectively have not been given patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).

Alternatively, the protein chip, gene chip and sensor set forth in claims 7,8 and 9 respectively concerns the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim.

Claims 1-3,7-9 are rejected under 35 U.S.C. 102(a) as being anticipated by **Jon et al** (2003 JACS 125:10186-10187 – IDS entry 6/30/2008).

**Jon et al** teach, throughout the document and especially the schemes, synthesis of various cucurbiturils which are subsequently immobilized on glass surfaces.

Cucurbituril structure 2 immobilized on glass, such taught by Jon et al in scheme 2 generates formulae 3 of claim 3, and reads on claims 1 when, n is from 4 to 20; R1 and R1' are each independently an alkenyloxy group with an unsaturated bond end and a substituted or unsubstituted alkyl moiety of C1-C20; and R2 is an alkyl group of C1-C10 with an end thiol functional group.

Said glass of Jon et al reads on claim 2.

The protein chip, gene chip and sensor set forth in claims 7,8 and 9 respectively have not been given patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).

Furthermore, the protein chip, gene chip and sensor set forth in claims 7,8 and 9 respectively concerns the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to

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patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1,2,7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Kim et al II** (US Patent 7388099) in view of **Richter et al** (US Patent Application 2004/0147396 – PTO 892 4/9/2008).

The claimed subject matter per claim 1 is drawn to a cucurbituril derivative-bonded solid substrate in which:

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a cucurbituril derivative of Formula 1 (shown in claims) is covalently bonded to a modified solid substrate of Formula 2 (shown in the claims)

wherein with regard to Formula 1, n is an integer of 4 to 20, and R1 and R1' are each independently an alkenyloxy group with an unsaturated bond end and a substituted or unsubstituted alkyl moiety of C1-C20, a carboxyalkylsulfinyloxy group with a substituted or unsubstituted alkyl moiety of C1-C20, a carboxyalkyloxy group with a substituted or unsubstituted alkyl moiety of C2- C8, an aminoalkyloxy group with a substituted or unsubstituted alkyl moiety of C2-C8, or a hydroxyalkyloxy group with a substituted or unsubstituted alkyl moiety of C2-C8, and

wherein with regard to Formula 2, R2 is an alkyl group of C1-C10 with an end functional group selected from thiol, amine, epoxy, isocyan, and isothiocyan.

Claims 2,7-9 represent variations thereof

**Kim et al II** teach, throughout the document and especially the abstract methods for preparation of hydroxycucurbiturils.

For example, in Synthesis Example 7 Kim et al II teach a cucurbituril derivative which reads on claim 1 (in part) when n=5; R1 and R1' are an alkenyloxy group with an unsaturated bond end and an unsubstituted alkyl moiety of C2.

Kim et al II do not teach the silicas Formula 2 set forth in claim 1.

**Richter et al teach**, throughout the document and especially the abstract inorganic adsorbent compositions comprising cucurbiturils.

In paragraph 0037 and 0039 Richter et al teach di(C1-C4)alkylamino silicas, which is taken as silica Formula 2 when R2 is an alkyl group of C1-C10 with an amine end functional group.

Richter et al teach in paragraph 0047 aluminates and titanates, which are taken as the aluminum oxide and titanium oxide substrates set forth in claim 2.



It would have been *prima facie* obvious for one of ordinary skill in the art, at the time the claimed invention was made to apply the procedure for preparing the hydroxycucurbiturils of Kim toward the inorganic adsorbent compositions comprising cucurbiturils per Richter et al.

One of ordinary skill in the art would have been motivated to use the procedure for preparing the hydroxycucurbiturils of Kim in concert with the inorganic adsorbent compositions per Richter et al because it would have easily provided for adding various substituents to the cucurbiturils making them more chemically versatile, which is advantageous according to Kim et al II in the paragraph bridging columns 1 and 2 through the first full paragraph in column 2.

The protein chip, gene chip and sensor set forth in claims 7,8 and 9 respectively have not been given patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).

Furthermore, the protein chip, gene chip and sensor set forth in claims 7,8 and 9 respectively concerns the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to

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patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim.

One of ordinary skill in the art would have had a reasonable expectation of success in combining the hydroxycucurbiturils of Kim et al II with the inorganic adsorbent compositions per Richter because both references concern cucurbituril chemistry, thus the hydroxycucurbiturils of Kim et al II lie well within the scope of technology according to Richter et al.

### ***Double Patenting***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1 and 3 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 3 of copending Application No. 10/544,850 (referred to as '850).

Although the conflicting claims are not identical, they are not patentably distinct from each other because claim 1, drawn to cucurbituril bonded solid substrate (genus), of the instant invention, is anticipated by the cucurbituril-bonded silica gel (species) set forth in claim 3 of application '850.

The '850 application claims formula 3 of present claim 3 (e.g. see '850 claim 3 formula 4a); the '850 application claims formula 4 of present claim 3 (e.g. '850 see claim 3 formula 5a); the '850 application claims formula 5 of present claim 3 (e.g. see '850 claim 3 formula 6a); the '850 application claims formula 6 of present claim 3 (e.g. see '850 claim 3 formula 7a).

Additionally, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify embodiments of '850 that fall outside the scope of the present application to select a specifically disclosed embodiment that falls within the scope of the present application because these embodiments describe compounds with similar physiochemical properties in that they all possess a common core structure and/or activity. In this vein see, for instance, applicant's arguments entered 5/9/2008 p 2, traversing the species election mentioned above, in which applicant mentions that each of cucurbituril-bonded materials of the present invention have the same function. Furthermore, one of ordinary skill in the art would have been motivated to make such a modification because such modifications are disclosed as

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“preferred” since the dependent claims of the present application “teach toward”

Applicant’s claimed cucurbituril materials in ‘850.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher M. Gross whose telephone number is (571)272-4446. The examiner can normally be reached on M-F 9-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner’s supervisor, J. Douglas Schultz can be reached on 571 272-0763. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Christopher M Gross  
Examiner  
Art Unit 1639

Cg

/JD Schultz, PhD/

Supervisory Patent Examiner, Art Unit 1635